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BOUNDARY SPANNING BY DESIGN: INSIGHTS FROM A VENDOR PERSPECTIVE

Wenyu Du
National University of Singapore, duwenyu@nus.edu.sg

Shan L. Pan
National University of Singapore, pansl@nus.edu.sg

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Completed Research Paper

Wenyu Du
National University of Singapore
Department of Information Systems
13 Computing Drive, Building 'COM1',
#03-68, Singapore 117417
duwenyu@nus.edu.sg

Shan L. Pan
National University of Singapore
Department of Information Systems
13 Computing Drive, Building 'COM1',
#03-68, Singapore 117417
pansl@nus.edu.sg

Abstract

IT Outsourcing (ITO) relationship management has long been a challenging issue. Past research has been devoted to four main mechanisms, namely contract management, partnership management, organizational control and boundary spanning. Whereas the first three mechanisms have attracted much attention, the study on boundary spanning remains scant, adopting only the client perspective and overlooking the vendor. In this study, we fill that gap by studying the boundary-spanning practice of two ITO vendors. The data collection and analysis are guided by a creative and sound theoretical lens - the alignment between boundary-spanning capability and boundary-spanning strategy. Two by-design models were thus derived. The alignment-form model depicts the outlook of alignment, and the aligning-path model depicts the process of achieving alignment. The study complements the ITO literature by providing a more complete picture of boundary spanning and provides practitioners, especially vendors, with specific guidelines on how to span boundaries.

Keywords: IT Outsourcing, Boundary Spanning, Organizational Strategy, Case Study

Introduction

The IT outsourcing (ITO) relationship is critical to the success of ITO because it meets outsourcing objectives for both clients and vendors. On the one hand, a harmonious ITO relationship can help the client to decrease transaction/production costs (Ang and Straub 1998), to access advanced technologies (Loh and Venkatraman 1992) and to focus on the competence that is strategic in nature (Lee et al. 2004). On the other hand, a healthy ITO relationship can help the vendor to focus on project quality and efficiency (Gopal and Gosain 2009), to access domain knowledge of the client's business (Levina and Vaast 2008), and to improve market reputation through client's recommendation (Levina and Ross 2003). Given its importance, vendors and clients have devoted enormous efforts to managing the ITO relationship. For example, client project managers spend more than 70% of their time, on average, managing the relationship (Kern and Willcocks 2002). Yet, despite these efforts, the relationship is still problematic, as it is intrinsically complex and includes various issues, such as prevalent opportunistic behavior (Argyres et al. 2007), multiple conflicts (Gopal and Gosain 2009) and numerous boundaries (Levina and Vaast 2008; Ramasubbu et al. 2008) between clients and vendors. Often, these issues are so acute that the ITO relationship itself is damaged (e.g. Cowley 2004). According to a survey by Deloitte Consulting, 70% of clients perceived their ITO relationships as unsatisfactory (Dongo 2008). Consistently, vendors are not content with the relationship either. A recent study reveals that one third of vendors intended to terminate their ITO contracts prematurely (Heng et al. 2009).

Because of these challenges, ITO relationship management has attracted much attention from researchers, who strive to find the effective mechanisms to manage the relationship. As a result, four mechanisms are researched into, namely contract management, partnership management, organizational control and boundary spanning. Contract management is used to limit opportunistic behavior between vendors and clients (Argyres et al. 2007; Gopal et al. 2003). Yet, it has never succeeded in covering every facet of the complicated ITO relationship, and as a result the relationship often invokes partnership management, which is used to complement contract management (Lee and Kim 1999; Willcocks and Kern 1998). Organizational control, on the other hand, is used to reconcile conflicts between stakeholders and marshal their resources in the same direction (e.g. Carson 2007; Miranda and Kavan 2005). Recently, boundary spanning has started to attract more attention. Given that vendors and clients often have radically different knowledge domains and expertise, for example vendors have strong technical knowledge but typically lack business domain knowledge, whereas clients have strong business domain knowledge but lack technical knowledge. In order to successfully manage an ITO relationship, it is important for both parties to collaborate on sharing knowledge across boundaries, thereby necessitating boundary spanning (Huang et al. 2001; Levina and Vaast 2008).

These four mechanisms have not attracted equal attention in academia. Whereas contract management, partnership management and organizational control have long been researched and generated a great deal of findings, research on boundary spanning is comparatively new and the findings remain scarce (with exception of Levina and Kane 2009; Levina and Vaast 2008). In our opinion, the boundary-spanning mechanism deserves more attention than it has received, especially with the new trend of offshore outsourcing (Couto et al. 2006). According to a report from McKinsey, the global market for offshore outsourcing is expected to exceed US$160 billion by 2012, up from US$60 billion in 2007 (Benni et al. 2009). IT managers have slowly realized that in addition to the lucrative labor cost arbitrage, organizations can also reap strategic benefits in offshore outsourcing, such as access to talents around the globe and ramping up projects ahead of the competition (Carmel and Agarwal 2002). Currently, the majority of ITOs have a substantial offshore component. Yet, despite the value it brings, the offshore component also brings liabilities to the ITO relationship. Because of the special situation of the client and the vendor being in different countries, the offshore outsourcing suffers from numerous language and culture boundaries on top of the general knowledge and expertise boundaries (Levina and Vaast 2008; Ramasubbu et al. 2008). As a result, the boundary issue becomes more salient and in turn, inhibits collaboration significantly and renders a healthy ITO relationship barely achievable (Levina and Vaast 2008). Under this circumstance, the understanding of boundary spanning becomes more valuable and, indeed, imperative.

Reviewing the limited research on the boundary-spanning mechanism, we find that researchers have focused on the mechanism mainly from the client perspective and sought to understand how clients span boundaries with vendors (Levina and Kane 2009; Levina and Vaast 2008), whereas how vendors span boundaries with clients is unwittingly left out. Vendor boundary spanning is also as critical as that of the client, if not more so. This is because vendors are often responsible for initiating boundary spanning between the two parties (Whitten and Leidner 2006) and the final

effectiveness of boundary spanning often hinges on vendors rather than on clients (Levina and Kane 2009). Hence, without a clear understanding of how vendors span boundaries, the successful boundary spanning may not be achievable in the ITO relationship, and the increasingly prevalent boundaries may turn the relationship into a failure. Our research aims to fill that gap. We took the case study methodology and compared boundary-spanning practice across two vendors, which were chosen based on their strengths and successes in spanning boundaries.

The main part of this paper is organized as follows. First, we review the literature on ITO relationship management and on boundary spanning. The former literature helps us to understand the roles and values of boundary spanning in the ITO relationship and the latter literature helps us to create the theoretical lens, which is adopted to guide data collection and data analysis. It needs to be noted that, although boundary spanning is underrated in ITO literature, it is well recognized in the management literature. The findings from management literature, although not specifically catering for ITO, are relevant and also rich enough to constitute a sound theoretical lens for understanding vendor boundary spanning. After the literature review, we will present our empirical approach and analysis of the two field studies. The discussion section frames the two vendors' boundary spanning through the theoretical lens. Finally, we conclude the study by drawing theoretical and practical implications.

Theoretical Background

ITO Relationship Management

Research on ITO relationships management has been into four main mechanisms: contract management, partnership management, organizational control and boundary spanning. Contract management is adopted primarily to reduce opportunistic behavior. According to the Transaction Cost Economics (TCE), opportunistic behavior comprises actions that lack honesty, are guileful and are motivated by self-interest (Williamson 1985). Opportunistic behavior is rife in the ITO context because vendors and clients, in general, cannot freely or unconditionally monitor each other's behavior (Ang and Beath 1993). Contracts, which detail the rewards and penalties, can significantly limit the scope for this kind of misbehavior (Argyres et al. 2007). Partnership management is used to complement contract management, which alone is not sufficient to eliminate opportunistic behavior, because contracts can never completely forecast every future task and are often ineffective in unexpected situations. Under these circumstances, vendors and clients often establish partnerships based upon common interests. The partnership can then induce the two parties to behave in accordance with each other's interests, especially in unexpected situations (Lee and Kim 1999; Willcocks and Kern 1998). Organizational control is used to ensure that individuals act in a manner that is consistent with the organization's (Kirsch 1997) and partner's (Gopal and Gosain 2009) goals and objectives. This mechanism has attracted much attention in ITO literature recently, because it is strong in reconciling stakeholder conflicts and integrating stakeholder capabilities (Kirsch 1997). In addition, these conflicts are prevalent in a ITO relationship as the relationship often involves multiple stakeholders (e.g. users, project managers, developers, and clients) and encapsulates intricate connections among these stakeholders (Gopal and Gosain 2009).

However, anecdotal evidence has shown that ITO relationships which are equipped by sound contracts, mutual-trust partnerships and sophisticated control portfolios can still fail completely, simply because the relationships are featured with salient boundaries (e.g. Couto et al. 2006; Cowley 2004). Boundaries set groups/organizations apart on the basis of their practice (Bourdieu 1977) and have been proved to be a significant and enduring inhibitor to collaboration (Hinds and Bailey 2003; Hinds and Mortensen 2005). However, despite its significance, boundary spanning has only been studied in the ITO context recently (e.g. Levina and Kane 2009; Levina and Vaast 2008). One important contribution of the study is the influence and remedy for two types of boundaries, one being the typical knowledge and expertise boundaries, which is commonly known as occupational boundaries (Bechky 2003; Ramasubbu et al. 2008) and the other being the language and culture boundaries, which is also known as national boundaries (Hinds and Bailey 2003; Hinds and Mortensen 2005). Although national boundaries are less researched into in management literature, they are prevalent in ITO relationships and often, they create more damages to collaboration than the occupational boundaries (Levina and Vaast 2008). To overcome these national boundaries, many clients designate immigrant managers as boundary spanners. These managers, who emigrated from popular offshore countries such as India, China and Russia and who are now working in the US, Japan or Western Europe, can speak the offshore language and understand the offshore culture (Levina and Kane 2009). Yet, despite these findings, prior research is incomplete in that it stands mainly from the client perspective, whereas how vendors span boundary has been left out. In order to offer a more complete picture of the boundary spanning in ITO, our study aspires to understand how vendors span boundaries. Next, we revisit the boundary-spanning literature to develop a sound and relevant theoretical lens to understand vendor boundary spanning.

Boundary Spanning

Although boundary spanning has not attracted much attention in the ITO context, it has been well studied in the management literature for over 40 years (e.g. Allen and Cohen 1969; Ancona and Caldwell 1992; Fennell and Alexander 1987; Rosenkopf and Nerkar 2001; Tushman 1977). During this period, research has generated numerous findings, which, although not specifically catering for the ITO context, still offers us a relevant and rich foundation for constructing the theoretical lens. In general, findings in boundary spanning can be categorized into two important streams, one is pertinent to the boundary spanners (e.g. Dollinger 1984; Tushman and Scanlan 1981a; Tushman and Scanlan 1981b) and the other is pertinent to the boundary-spanning strategy (e.g. Ancona 1990; Ancona and Caldwell 1992; Levina and Vaast 2006). Boundary spanners, according to the seminal work of Leifer and Delbecq (1978), are defined as those who operate at the periphery of an organization, performing organizational relevant tasks and relating the organization with elements outside it. Boundary-spanning strategy, according to Ancona and Caldwell (1992), is defined as the patterns of boundary-spanning activities that a group or organization demonstrates over a period of time.

Boundary Spanners

In most cases, boundary spanner is a role rather than a specific individual. In fact, anyone in the organization can become a boundary spanner as long as s/he is assigned to do so (Tushman and Scanlan 1981a). Evidence has also shown that, under some circumstances the entire group can be assigned to span boundaries and in that event, everyone in the group functions as a boundary spanner, even though s/he may not be aware of it (Marrone et al. 2007; Tushman 1977). Yet, the boundary-spanner role is not always officially assigned. Sometimes, individuals without designation for boundary spanning can still emerge and span boundaries successfully (Levina and Vaast 2005). Although everyone in the group can be assigned as a boundary spanner, very few can do it successfully in practice, because there are certain abilities required and those abilities are not possessed by many employees. Levina and Vaast (2005) coins those who span boundaries successfully in practice as 'boundary spanner-in-practice'.

We are then interested in the abilities that boundary spanner-in-practice possesses. According to Tushman and Scanlan (1981a), an individual must be both an internal communication star and an external communication star, in order to successfully assume the boundary-spanner role. To emerge as an internal communication star, the individual needs to have the technical ability, so that s/he will be frequently consulted by internal members on work related matters (Allen and Cohen 1969). To emerge as an external communication star, the individual needs not only the technical ability but also the communicative ability, because numerous communication impediments exist between the internal and the external, such as idiosyncratic identities, routines and norms (Tushman and Scanlan 1981a). So we conclude that the technical ability and the communicative ability are the two critical abilities that employees need in order to span boundaries successfully. We term these two abilities as 'boundary-spanning abilities'.

There are also some other abilities that are required, for example the ability to process a large amount of information (Dollinger 1984), to promptly sense and respond to the environment (Marrone et al. 2007), and to appreciate and adapt to different cultures (Ang and Inkpen 2008). Given the limited space of the paper, we cannot cover all of them. However, it is also not necessary to do so, because these abilities are somewhat overlapped with the technical and communicative abilities: 1) the information-processing ability can be understood as a result of the technical ability in that technical experts can process information much faster than non-experts; 2) the ability to appreciate and adapt to other cultures can be understood as part of the communicative ability, since good communicators should be able to understand other cultures easily, in order to communicate smoothly; and 3) the sensing and responding abilities can be viewed as the amalgamation of both technical and communicative abilities, as individuals need the communicative ability to sense the environment regularly and the technical ability to respond to the changes efficiently.

One limitation of the past literature in boundary spanners is that researchers have devoted much attention to the ability of individual spanners, yet neglected the organizational capability that the spanners constitute. In fact, the boundary-spanning capability of the organization can be understood as the collection of boundary-spanning abilities of the individuals (Dollinger 1984). In other words, individuals' technical and communicative abilities constitute the organization's boundary-spanning capability. This limitation significantly restricts the contribution of the boundary-spanner research, because without abstracting the organization capability, the spanners' influence on the strategic level could not be tapped. Our study aspires to establish the linkage between the individual spanners and the boundary-spanning strategy. We do so by conceptualizing the boundary-spanning capability, which is constituted by individuals and can further influence the strategic choice of the organization with respect to boundary spanning.

Boundary-spanning Strategy

According to the definition, boundary-spanning strategy can be discussed at both the organization-level and the group-level. Nevertheless, the focus has been on the group-level, with limited studies on the organization-level, which mainly looks at boundary spanning within an organizational network rather than between two specific organizations (e.g. Fennell and Alexander 1987). The group-level study is also more meaningful, because although boundary spanning is often discussed in the context of inter-organizational communication, the real interaction in fact happens at the group-level, and groups are the major units that handle the communication (Galbraith and Kazanjian 1988). Research at the group-level has been interested in categorizing different types of strategies and exploring the effects of those strategies on performance. Although the findings are rich, they are often unable to converge because different studies stem from very different positions and worse still, adherents of different positions typically do not concede that their perspective reveals only part of the whole story. This renders the borders of these findings less clear and reduces their implication. To solve the problem, a theoretical synthesis is imperative. Our synthesis was conducted through a thorough review and analysis of the literature. It results in three types of boundary-spanning strategies based on three distinct perspectives that the strategies took, namely the orientation perspective (e.g. Ancona 1990; Ancona and Caldwell 1992), the content perspective (e.g. Levina and Vaast 2006; Schultze and Orlikowski 2004) and the structure perspective (e.g. Marrone et al. 2007; Tushman 1977).

First, with respect to the orientation, strategies can be identified as those which respond to and those which anticipate the environment. For example in Ancona (1990), the 'informing' and 'parading' strategies can be considered as responsive strategies, because they are characterized with boundary-spanning activities that are only initiated to respond to the environmental changes. On the other hand, the 'probing' strategy can be considered as an anticipatory or proactive strategy, as it is characterized with boundary-spanning activities that are not initiated to respond, but initiated to anticipate the environment proactively, solving problems even before they emerge. Both responsive and proactive strategies have their strengths and weaknesses. The former strategy is strong in harmonizing internal operations, but weak in sensing environmental changes. The latter strategy is strong in tracking the environmental changes, but weak in creating internal efficiency (Ancona 1990; Ancona and Caldwell 1992). Second, with regard to the content, strategies can be identified as professionally-driven strategy and socially-driven strategy. For example in Schultz and Orlikowski (2004), the 'arms-length' strategy can be identified as a professionally-driven strategy as its activities feature much professional interaction but minimal social interaction. On the other hand, the 'social-embeddedness' strategy can be identified as a socially-driven strategy as its activities feature much social interaction but minimal professional interaction. Similarly, both professionally-driven and socially-driven strategies have their strengths and weaknesses. The former strategy leads to efficient interaction, but confines the emotional connection with the outsiders. The latter strategy induces emotional connection with outsiders, but increases cost in the interaction (Levina and Vaast 2006; Schultze and Orlikowski 2004).

Third, with respect to the structure, strategies can be identified as narrow-engagement strategy and broad-engagement strategy. The narrow-engagement strategy assigns a limited number of boundary spanners in front of the client, whereas the broad-engagement strategy often assigns as many spanners as possible, sometimes the entire team (Marrone et al. 2007; Tushman 1977). The structure perspective has long been recognized, because boundary-spanning activities, by the nature, are implemented and manifested through organization structures (Leifer and Delbecq 1978; Leifer and Huber 1977). However, with respect to the effectiveness of the strategies, there lacks an agreement and two profound ways of thinking are in sharp contrast. The conventional wisdom (e.g. Allen et al. 1979; Tushman 1977) suggests that narrow-engagement strategy is more effective. The reason is that the differentiation across boundaries makes widespread communication inefficient and prone to distortion. Thus, having a limited number of boundary spanners, which results in a unique and authoritative conduit for information transfer, can increase efficiency and reduce errors. The modern wisdom (e.g. Friedman and Podolny 1992; Marrone et al. 2007), on the other hand, suggests that the broad-engagement strategy is more effective. The reason is that the heavy workload of boundary spanning makes the spanners easily overloaded if the rest of the team does not share responsibility, which is essentially the case in narrow-engagement strategy. Thus, having every employee share the boundary-spanning role may reduce the workload on individual spanners and at the same time, offers the group more opportunities for valuable information. Both arguments have considerable empirical support. Therefore, it is reasonable to believe that the disagreement is attributed to an important contingency that has been overlooked in those two streams of studies. We believe that this contingency factor lies under the readiness of internal boundary spanners as the effectiveness of the strategies is often limited or strengthened by the spanners. Yet, spanners have never been brought up in this context.

In addition, these three perspectives are not isolated from or independent of each other. Instead, they complement each other effectively by explaining different parts of the strategy. Among these three, the structure perspective is indisputably the most critical one, upon which the orientation and content perspectives are built. The structure perspective also offers a broader influence, given that groups in the same organization often share the same structure-level strategy for boundary spanning. The structural similarity minimizes the transaction costs across groups (McKelvey and Kilmann 1975). Hence, structure-level strategies are often decided by the top management of the organization and implemented across all the project groups. Comparatively, with respect to the orientation and the content, groups in the same organization can and often do adopt different boundary-spanning strategies. For example in Ancona (1992), groups of the same organization, can engage clients through different orientations (i.e. some are more response-oriented, while others are more anticipate-oriented) and through different content (i.e. some prefer professionally-driven interaction, while others prefer socially-driven interaction). In practice, strategies on the orientation and content levels are often decided by the team managers rather than organization management. Given the criticality and the broad influence of the structure perspective, we adopt it as our primary perspective in this research. In the following part, if not specified, boundary-spanning strategies are referred to as structure-level boundary-spanning strategies.

As mentioned above, boundary spanners and boundary-spanning strategies are closely associated. This association is mediated through the boundary-spanning capability, which is the embodiment of every employee's boundary-spanning abilities. Further, the capability and strategy are intertwined and one cannot take effect without the support of the other. For example, boundary-spanning capability cannot be properly developed if the development is not guided by a suitable strategy, and boundary-spanning strategy cannot be properly implemented if the implementation is not supported by a suitable capability. Hence, instead of maintaining that the capability and strategy be important determinants of successful boundary spanning, it is more accurate to state that the alignment of the two is the very determinant. As a result, we adopt this alignment as our theoretical lens to understand how vendors span boundaries. From this lens, we derive our research question:

How does the vendor align its boundary-spanning capability and boundary-spanning strategy?

Research Methodology

The case study methodology was adopted for this study. There are two reasons for this. First, the research question is a 'how' question, and it is suitable for exploring such questions through case studies (Walsham 1995). Second, boundary panning is complex in nature and is inextricably linked to the organizational context (Ancona 1990), which makes the qualitative approach more suitable (Klein and Myers 1999). In the process of data collection and data analysis, we adopted the approach of 'soft positivism' or 'scientific realism' (Kirsch 2004; Mitrophanous 1997). This approach allowed us to conduct the field study with certain expectations based upon prior theories, which is more typical of the positivist approach, while also allowing unexpected findings and explanations to emerge from the data, which is more typical of the interpretivist approach. Guided by the soft positivism, data was collected with the objective of identifying the alignment between boundary-spanning capability and boundary-spanning strategy. This alignment, as already mentioned, is the theoretical lens which functions as the 'sensitizing device' (Klein and Myers 1999) in that the interviews are guided by the lens, the voluminous interview data is screened through the lens, and the theoretical model is fleshed out based on the lens. However, because boundary spanning is often idiosyncratic to the organizational/group context (e.g. Ancona 1990; Ancona and Caldwell 1992), we recognized that the capability and strategy may have their own unique characteristics unrelated to any theoretical classification offered in the literature. We were thus open to the softer or interpretivist position to welcome unexpected findings. Because the alignment has never been discussed in the past literature, it is not difficult to encounter unexpected findings.

Using soft positivism, data analysis was conducted at the same time as the data collection. Data is coded, arranged into the identified set of themes and then merged into the emergent model. If the data and model could not merge with each other seamlessly, we would go through an iterative process of moving back and forth between data, model and relevant literature, until the unexpected data can be explained by the literature and merged into the emergent model successfully. The data collection ceased until 'theoretical saturation' was reached, in which we experienced significant overlaps in the data collected and found it difficult to extend the emergent model in a meaningful way (Eisenhardt 1989). With respect to the presentation of the findings, the narrative strategy and visual strategy were adopted in order to condense the large amount of data into a more manageable size (Langley 1999) and present the emergent model in a more succinct way (Meyer 1991). The diagrams capturing the emergent models were presented

to the relevant stakeholders of the two organizations to validate our interpretation of the data. To ensure the validity of the findings, we verified that each of the findings was supported by at least two data sources (Klein and Myers 1999).

For the purpose of case selection, two criteria were identified. First, the case organizations should have active boundary-spanning practice and therefore, the researchers would have rich data for analysis. Second, the case organizations should have successfully spanned the boundaries so that the findings derived can be recommended to other vendor organizations. Based on these two criteria, two case organizations were chosen. The first organization is Carta Corporation (a pseudonym), one of China's leading ITO vendors. The second organization is Magma's Global Support Center (GSC) in China. Magma (a pseudonym) is one of Europe's leading IT vendors. Both organizations take on ITO projects from Japan, which is the second largest IT outsourcing country in the world after the US. The Japanese clients are more active than the US ones in engaging boundary-spanning practice with their vendors, because of the 'Keiretsu' culture (Apte et al. 1997). Thus, this setting has offered a sounder context to research boundary spanning than the settings based on US clients. While the first criterion is fairly easy to identify, the second one is rather more challenging. Before entering the field, we have limited evidence to prove that the organizations that we are going to interview have successful boundary spanning. The best we could do is to select the organizations with successful ITO relationships with their clients. Although that success can be attributed to multiple factors, it is very likely that successful boundary spanning is one of them. In our cases, both organizations have successful relationships with their clients. The second hand data (e.g. newspapers, internal publications and industry reports) corroborate this by showing that, in Carta a large percentage of clients evolve to become strategic partners after their initial engagement with the company, and in Magma, the majority of clients record a high satisfaction rating after them receiving service from the company. The initial data collected further confirmed our assumption by exhibiting that both organizations have successfully overcome the occupational and national boundaries with their clients, demonstrating the strength of understanding and responding to client needs.

The two organizations are located at the same city, Dalian City, which is one of the largest software industry bases in China. Locating in the northeast region of China, Dalian is geographically close to Japan. Besides, the city also has a large Japanese-speaking population on account of its 50-year history as a Japanese colony. Hence, it becomes the most popular location for Japanese outsourcing. Since the 1980s, Japanese companies have started to outsource their manufacturing and development to Dalian. Some scholars have termed Dalian as the 'Bangalore of China' (e.g. Oshri et al. 2008), because whereas American and European companies typically have gone to Bangalore, Japanese companies have turned to Dalian. Research access was negotiated and granted in October 2009. The Senior Vice President of Carta and the General Manager of Magma provided the entry and the widespread access. The first round of interviews comprised direct face-to-face interaction, while the follow-up interviews were either face-to-face or by telephones or e-mails. The interviews were conducted over 10 project groups, ranging in size from 17 to 80 members. In general, interviews lasted from 90 minutes to 2 hours and were all digitally recorded and later transcribed for data analysis. Data triangulation has been achieved through iterative data validation and consolidation from the multiple researchers until a congruent and coherent theme emerges (Yin 2003). Whereas the personal interviews were the primary data source, they were supplemented by other secondary data such as newspaper articles, internal documents, and industry reports. Notes from direct observation were also used to corroborate the data obtained (Walsham 2006).

Case Description

Carta Corporation

Carta Corporation is a leading Chinese IT provider and was ranked as the No.1 ITO vendor in China in 2009. The company now has over 15,000 staff and 9,000 clients worldwide. However, only 17 years ago this company was merely a startup incubated at North University (a pseudonym) with fewer than 10 people. North University is one of China's leading universities, especially in Computer Science. The startup, originally a software and network research lab in North University, was incorporated in 1991, as a strategic partnership between the university and Aldo Corporation (a pseudonym), a leading Japanese electronics company. Through the data, we found that Carta's boundary-spanning practice evolves in three important phases of the organization. In the following part, we will use the narrative strategy to describe the practice in each of the phases.

Phase 1: Recruiting Engineers with Advanced Technical Ability (1991-1996)

Aldo played a critical role in Carta's early development. During this time, Aldo was the second largest shareholder (i.e. the largest was North University) and the major client of the company. Before Aldo made its appearance, Carta was only a network and software research lab of North University, with fewer than 10 people (i.e. two university professors and the rest being their graduate students) and 30,000 RMB research fund. The partnership started in the late 1980s. At that time, Aldo set up two plants for manufacturing embedded systems in the northeast region of China. Meanwhile, the company was seeking research institutes for the software development needed in the embedded systems. Carta was selected among all the candidates, because the lab had adopted the simulation-development approach, which was considered as the most contemporary approach, even in the US. The partnership was signed in 1991 and it has since been a success.

Aldo has always been very helpful to us. They engage us very closely. You know, at the beginning, we didn't have any experience working with the Japanese and we often made stupid mistakes. For example, we once received bug reports of hundreds of pages…but, Aldo was incredibly patient. They guided us step by step. When they formed the partnership with us, they indeed wanted it to be enduring and long-term. We feel very grateful to them. [Senior Vice President, one of the four founders]

In the early days, the key challenge faced by the young organization was the severe shortage of experienced engineers. The simulation-development, by its very nature, was irreducibly labor intensive and the existing lab engineers were far from being sufficient. Fresh graduates, although low-cost, were not the desirable options at that time, because the startup had little training capacity to bring up the inexperienced graduates and very often, new recruits were given important project roles right after they came on board. This made the experienced engineers highly valuable. Experienced engineers requested limited training, as most of them were already veterans in project development. They also had some experience working with the client. This experience was very valuable then, as engineers were often required to work closely with the client. However, experienced engineers were difficult to find and acquire. To overcome this challenge, Carta sought help from its parent organization, North University. The university helped in lobbying its affiliated research labs to partner with or join Carta, which were often filled with experienced engineers. Examples of the institutes joining Carta included a Management Information System (MIS) lab with a headcount of 25 and a Virtue Networking Research lab of the similar size. Acquiring these experienced engineers, the young organization established an outstanding engineering team, which is deemed as the best in the northeast region of China. The team also successfully demonstrated its value in front of the client.

The Carta engineers are amazing. I worked with them on one of the projects. The project was expected to finish in four months but they finished it in only two and half months. After that, they came to us, asking for more work. At that time I did not have anything for them, so I just pick up a research project that we had given up. Guess what? They managed to solve it in just two weeks. I was utterly impressed. [Project Manager, Aldo. Abstracted from the book "Beyond technology: the myth behind Carta's 17-year rapid growth" (Deng 2008, Page 30)]

Phase 2: Restructuring the Communication Model (1996-2000)

Carta's success was not only recognized by Aldo but also by other Japanese companies of which Toshiba was one. In 1996, Toshiba formed a partnership with Carta. As a world-renowned technology company with 300,000 staff worldwide, Carta had great expectations of the partnership at first. However, it did not take long before the company realized that the partnership did not bring them as much as they expected. Most Toshiba projects were merely non-core and short-term developments, such as debugging, customization and localization. These projects all suffered from low profit margin and worse still, they rarely ran on the continuing basis. The discontinuity inevitably prevented Carta from accumulating knowledge and creating domain expertise. The company was very concerned and it started to analyze the root causes. Soon, it discovered that the problem existed in its communication with the client. Before 1996, Carta's client communication was primarily handled by engineers. In particular, engineers and clients were working closely together under a joint-development model. This model worked well in the Aldo partnership, wherein projects were more research oriented and with limited communication required. However, when coming to work with Toshiba, the model emerged into a notable problem. Toshiba's teams apparently did not appreciate the quality of communication provided by the engineers, who were primarily hired on the strength of technical ability and not necessarily good communicators.

We are not sure if they understand our requirements. The answer that we derive from the regular business correspondences seems to be negative…. There are multiple grammatical errors in their correspondence, which are

really annoying. How do I trust their codes are error-free, when they are constantly making grammatical errors in the emails? [Project Manager, Toshiba (Deng 2008, Page 90)]

A straightforward solution was to improve the existing engineers' communication ability or to replace them with ones who are better in communication. However, neither was as viable as it seemed. First, communicative ability was difficult to improve in a short period. This was especially true when the communication was conducted in Japanese, a language featuring sophisticated rules and vocabularies. Second, the existing engineers could not be replaced easily, because they were the indispensible part of the technical capability. Carta had spent enormous efforts in building up the technical capability. This capability had thus been firmly embedded into the organization and any change to it would encounter severe resistances. The organization also positioned the technical capability as its competitive advantage and any change to it might jeopardize the organization's survival.

An indirect approach was to downgrade the communication model to work around with the limitations of the existing capability. Although this approach seemed like an avoidance or escape, the management team finally decided to take it. The joint-development model was thus downgraded to a separated-development model, in which the engagement level was reduced from multiple persons to one person. This one person was named as Window Project Manager (short for 'Window'), since s/he functioned as the window between the two parties. This model was then referred as window-communication model. In this model, only the Window was allowed to communicate with the client. On the one hand, the Window gathered the information from the client and articulated it to the engineering team in a language that engineers were able to understand. On the other hand, the Window ensured the information released from the engineering team was accurate and professional, with respect to both content and language. Given the importance, the Window must be no ordinary employee. S/he must be a technical expert and a good communicator at the same time.

The Window is the superstar of the team. They must have a lot of experience in their domain and have no problems in communicating in Japanese. Sometimes, we could not find enough qualified Windows inside the company. So, we went overseas and recruited Japan-born engineers to be Windows. But these people must also have the relevant technical background. Without any of these two abilities, they could not accomplish the job. [Senior Manager who used to be a Window]

In spite of the negative feeling of downgrading, the window-communication model was a great success. It effectively enhanced client communication with only the existing capabilities at hand. The client also liked this new model, as their requests were often understood accurately and responded promptly through the Window. Since the Windows were the only Carta employees that the client could see, they also played the representational role. Because of their technical plausibility and communication appeal, the Window gave the client peace of mind and great confidence in the team. Clients often imagined that they were served by an elite team, every one of which was both technical and communicative strong. As a result of the success in communication, Toshiba started to assign important and large-scale projects to Carta. By 2003, the client had outsourced in total 30-million USD businesses. Meanwhile, the window-communication had also gained popularity in Carta and soon became its standard practice for client communication. This standard practice was also well received by the engineering team, as it freed the team from clients' pressures so that they can then focus on improving on technical excellence.

Phase 3: Further Enhancing Engineers' Abilities (2000-Present)

This period is the golden age for China's ITO industry, in which Carta has enjoyed an unprecedented growth rate. The revenue doubled in approximately every two years and the projects were becoming larger. Some clients outsourced their entire IT functions to Carta and some of these projects used a few hundred engineers. Because the window-communication had isolated the engineers from client communication, the engineers became more technical-oriented and less professional-oriented. In this case, experienced engineers did not have much more value than the fresh graduates. Carta were thus more inclined to recruit low-cost fresh graduates, who were well trained in coding. These engineers were often referred as 'code warriors'. In 2000 Carta started to build its own IT institute, Carta Institute (a pseudonym). Currently, Carta Institute has established three campuses, with over 25,000 students in total. Every year, it supplied the company with over 2000 graduates. The reason that Carta built its own institute rather than recruiting from public institutes was that the company could ensure the graduates were well trained in coding. Curriculums in Carta institute were thus designed in a polarized matter, with over emphasis on coding and limited coverage on the rest, such as business acumen and communication. Conversely, this polarized curriculum did not bring down the value of the graduates, but instead it enhanced the values. The technical strength that it

imparted has become a favorable trait of the graduates. Now, even the industry leaders, such as IBM and HP, came to Carta Institute for recruitment.

I think one of our biggest advantages is the IT institute. Today, we could easily recruit 2000 graduates per year from the institute, and 2000 IT graduates are not easy to get in the job market, even in China. Also, our graduates have advantages that others don't. Since our institute focuses purely on coding, our graduates have intense coding experiences right after graduating. And now even IBM, HP and Sun are coming to us for talents. [Program Manager, Outsourcing Division]

However, to support the window-communication, a large pool of code warriors alone was not enough. The organization needed a group of elites who were able to function as Windows. So, another enhancement that Carta made to its capability was the development of Windows. As already mentioned, Carta used to hire Japanese engineers as Windows in the early stage, because there were not enough qualified Windows internally. This gap was well elaborated by an internal project-manager assessment, which revealed that in 2000 only 70% of project managers were qualified to function as Windows (Deng 2008, Page 90). Yet, this number has been increased substantially since then. In 2006 it reached 90% and in 2007 it exceeded 130%, meaning that Carta not only had enough Windows for its current projects but also 30% reserve for its future deployment. This increase was made possible by the high-end language and culture training, which was often conducted in Japan, with the objective of immersing the trainees into the most authentic environment. However, unlike the technical training, this communicative training was only limited to selected employees. These employees were either existing project managers or technical leaders who were on the track to become the Windows.

The communication-related training is not the primary focus of the organization. The primary focus is still on technical training…. the communicative training is not open to everyone. It is a premium program that is only available for managers or technical leaders, like us. Sometimes, we are also given the opportunities to work in Japan on rotation basis. This is very helpful for us to understand how to work with Japanese. [Technical Leader, on the track of becoming a Window]

Magma AG

Magma Global Support Center (GSC) is the subsidiary of Magma AG, a global corporation that provides enterprise software. Magma is best known for its Enterprise Resource Planning (ERP) system. The company has 47,000 employees now and users in over 120 countries. To support these users, Magma has built numerous local support centers. However, the organization later realized that it was more effective to consolidate those small local support centers into large-scale Global Support Centers (GSCs) and then locate these GSCs in countries with low labor cost. Seven GSCs were thus set up in Brazil, Ireland, Spain, Austria, India, Malaysia, and China. In contrast to conventional practice that support centers are cost centers, in today's ITO context support centers are in fact a major revenue generator of the vendors. Nowadays, a large component of the ITO contract is pertinent to support and maintenance. Industry leaders, such as Magma and Oracle, enjoy nearly 50% of the total revenue from providing support (see example of Oracle's annual report 2009) and this percentage is continuing to grow in the foreseeable future, as attributed to the low profit margin from the software licensing and one-off implementation. As a result, the support centers are becoming an increasingly important part of the ITO business. GSC China was set up in 1997 to support the Asia Pacific and Japan (APJ) region, with the primary focus on Japan. The center is now able to handle 80,000 issues a month, which is on a par with the most established and mature GSCs. Similar to the Carta case, we also derive three important phases with respect to Magma's boundary-spanning practice and we use the narrative strategy to describe the practice in each of the phases.

Phase 1: Creating a Communication Model (1997-2004)

The China support center was set up in 1997, aiming to take over the support center in Japan. However, the new center did not develop quickly and migration was constantly dragged back. The management team had major concerns that the offshore support may not work as effectively as the local one, because Magma's systems might be too complicated to be supported by an offshore team. The systems had such as a broad range, including nearly every enterprise system in the marketing. This complexity inevitably generated enormous support workload. Often, because every client thought their problems more important than others, they expected the workload to be cleared promptly and swiftly. To deal with the heavy workload and the pressure in handling it, Magma needed a mass delivery model and the message-solving (MS) mechanism was thus created. The model works as follows: the user submits a message when s/he encounters an issue; the message contains all the information needed to understand the

issue, such as the technical component, the priority, and the symptoms; each message is assigned to a consultant through an automatic routing system that matches the technical component of the issue with the expertise of the consultants; for example, an issue pertinent to the database will be routed to a database consultant; every consultant, upon joining, will be trained to become an expert in a specific set of technical components. In the MS mechanism, consultants face clients directly, without the middlemen, and this speeds up the response time, as issue resolution often needs joint efforts and intensive collaboration between the consultant and the client.

However, despite the merits, the MS mechanism did not produce the expected outcomes at this stage, because consultants in new organization were not able to meet the high requirements demanded by the MS mechanism. Consultants must have both technical ability and communicative ability in order to be productive in the MS mechanism. Technical ability is needed, without which consultants are not able to become technical specialists. Communicative ability is needed, without which consultants are not able to communicate with clients directly. In addition, the high expectations from the Japanese clients raised the bar even higher. First, they expected the perfect technical solution. For example, any bug in the code was considered to be an embarrassment. Second, they expected error-free correspondence. For instance, emails with grammatical mistakes would not be read. The general manager summed up this challenge elaborately *"We are probably taking the hardest job in IT support"*.

Phase 2: Recruiting Engineers with Technical and Communicative Abilities (2004-2008)

China ITO business came to a new arena at this phase. The government offered various preferential policies to attract foreign investors to set up their ITO centers. Under this circumstance, many Magma's competitors and partners, such as GE, Oracle, and IBM, started to move their Japanese support centers to China. Finally, Magma's management team made the decision to officially start the long-dragged migration. The very first task on the to-do list was to recruit talents with both technical and communicative abilities and fit them into the MS mechanism. The organization soon realized that this recruitment was very challenging. In the job market, people with technical ability were many and people with communicative ability were also prevalent, but people with both abilities together were very limited. These people were often at the high-end of the job market and were expensive to acquire. However, the organization decided not to compromise the quality.

The weakest hire I would accept would be someone who only majored in Japanese but maybe worked 3 years in Japan in a technical role. That is probably the weakest candidate I will consider. Anything else doesn't work. [General Manager]

In order to attract these high-end consultants, Magma took several approaches. First, it strategically located its office in two cities (i.e. Dalian and Shanghai) so that it could have access to talents in both cities and give them more flexibility in choosing where to work. In general, graduates from north China may prefer Dalian over Shanghai and graduates from south China may prefer Shanghai over Dalian. Second, the organization sponsored a double-major program (i.e. one major in engineering and the other in Japanese) in the best university of Dalian. That program was also the best in the university, offered to only the top students. Because of the sponsorship, Magma's priority was to recruit its members for internship and very likely, interns would choose to stay after the term. Attributing this to the prestigious brand and excellent career development opportunities, Magma never had any problems in wooing the best graduates. Third, the recruitment was also stretched to overseas, with the objective of taking Japan-born engineers or Chinese immigrants who had worked in Japan for a couple of years.

Even when the employees were very talented, they could not become productive until they have been through an intensive training. The training is so intensive that every time before a new employee signing up the contract, the manager would warn him/her that: *"Are you sure that you want to join us? You know, the learning process will be very tough."* The training was in two stages. First, new employees were given 3 to 6 months to familiarize themselves with the MS mechanism, after which, they would be assigned to handle low-priority issues. Magma had faith in their consultants that after the initial training, they would be able to face the client. The second stage was longer, ranging from 14 month to 2 years, depending on the readiness of the consultants. At this stage, the consultants would be assigned to a specific set of technical areas and to acquire deep knowledge in those areas. Alongside the technical training, consultants are also mandated to take various communicative training.

With regard to the language training, we have a full-time trainer in-house. She is Japanese and she used to work for Magma Japan. So she understands the contexts that we are in and she can adjust the training according to our work. The consultants find this kind of training very effective…We also have intensive training on client interaction.

The company often flies interaction experts from Japan here to conduct this training. [Consultant who handles message solving]

Phase 3: Further Enhancing the Communication Model (2008-Present)

Through the high-end recruiting and the intensive training, GSC China developed a strong consulting team, in which everyone was able to communicate effectively with clients and everyone have evolved to be a technical specialist, some even being nominated as globally recognized experts. Using this team, the MS mechanism started to show its advantage. In year 2008, over 800,000 issues were solved and most of them were solved in a short time. Client satisfaction was thus maintained to an equally high level, with a slight decrease, as compared to the time when support was provided by local Japanese consultants. Despite the great success, the management team did not want to just settle there, rather they aspired to offer clients more value-added services and improve client satisfaction to another level. The improvement was made at the support mode. Previously, the support was following a responsive mode in which consultants waited for clients to contact them and then delivered the service. In the new mode, the consultants were expected to proactively engage the client. Under this new mode, a new team were set up, namely the Support Advisory Center (SAC) team.

Customer satisfaction is the core value for us. But, it cannot be significantly improved through the existing support mode. We need a new one. We need to actively drive clients. We need to exceed their expectations and provide services before they even ask for it. [Group Leader, SAC]

SAC was initially set up under the message-solving team, but with a distinct approach as compared to the MS team. Instead of waiting for the client to raise issues and log messages, SAC proactively surveyed clients and eliminated issues before they even emerged. The survey was often conducted through conference calls with the client. In general, clients were open to share their concerns or potential issues, but some still remained skeptical. So consultants needed to persuade the reluctant ones to share. Another approach, which was more automatic and impersonal, was to install monitoring software on the client systems. The software would screen the system regularly and send back status reports, based on which the SAC team could identify the potential issues and then approach the client with targeted solutions on hand. Again, some clients remained skeptical about installing the software on their systems and consultants had to persuade them. The SAC team was well received by the client. It received 64 thank-you notes within the first five months of its operation. As a result of this initiative, the client satisfaction rose to a new level, higher than the time when support was provided by the Japanese support center. The success would not be possible without a handful of experienced consultants, who were developed over the years. After the earlier development, these consultants have accumulated robust technical and communicative abilities, which enabled them to implement this proactive support mode successfully.

SAC service was actually a very comprehensive process. Currently, only our group can do this. The group members are very carefully selected. Each of them has at least 3-year experience working in message-solving. So, they all have very wide knowledge and experience with regard to Magma's systems. They also have a very good feeling of communicating with the client. [Group Leader, SAC]

Discussion

To recall the research question, this study aspires to uncover how the vendor aligns boundary-spanning capability and its boundary-spanning strategy. As we progress from the field to our model, to the literature, then back to the field and again to the literature, we inductively derive two models. The first model delineates two alignment forms and the second model delineates two aligning paths. Both are important facets of the alignment. The form model ascertains the final output of the alignment, without understanding which, the vendor may not know whether its arrangement is aligned and which direction it should work towards. The path model depicts the process to achieve alignment, without understanding which, the vendor may linger on the way to alignment but not reach there. Given that these two models are inductively derived from empirical data, the following report provides an explanation of how the existing literature corroborates the models.

Alignment Forms

The two organizations have adopted two distinct forms of alignment in which two types of boundary-spanning capabilities are identified (Figure 1). In Carta, the boundary-spanning capability is only partially developed. Most employees have only a strong technical ability but limited communicative ability. Given the polarized development,

we theorize this type of capability as the 'polarized capability'. Vendors with rich technical capability but limited communicative capability are prevalent. For example, software-development vendors, which often overemphasize technology and overlook communication, result in a polarized capability (Choudhury and Sabherwal 2003; Richmond and Seidmann 1993). In Magma, the boundary-spanning capability, on the other hand, is fully developed. Every employee has both technical and communicative abilities. Given the ambidextrous development, we theorize this type of capability as the 'ambidextrous capability'. This capability is not unique to Magma either. Rather, it is prevalent among system-development vendors and technical support centers, which often handle client-specific problems and frequently communicate across different client functions (Allen et al. 1979). Aligned with the two capabilities, two distinct strategies are identified. In Carta, the strategy is enacted through the window-communication model. External engagement is confined to Windows only and the rest team remains isolated from the client. Hence, the strategy is discerned as a form of the 'narrow-engagement strategy' (Marrone et al. 2007; Tushman 1977). On the other hand, the strategy of Magma is enacted through the Message-solving mechanism. Then, the boundary spanning responsibility is distributed to every consultant in the team, rather than to some specific individuals. Hence, the strategy is identified as a form of the 'broad-engagement strategy' (Marrone et al. 2007; Tushman 1977).

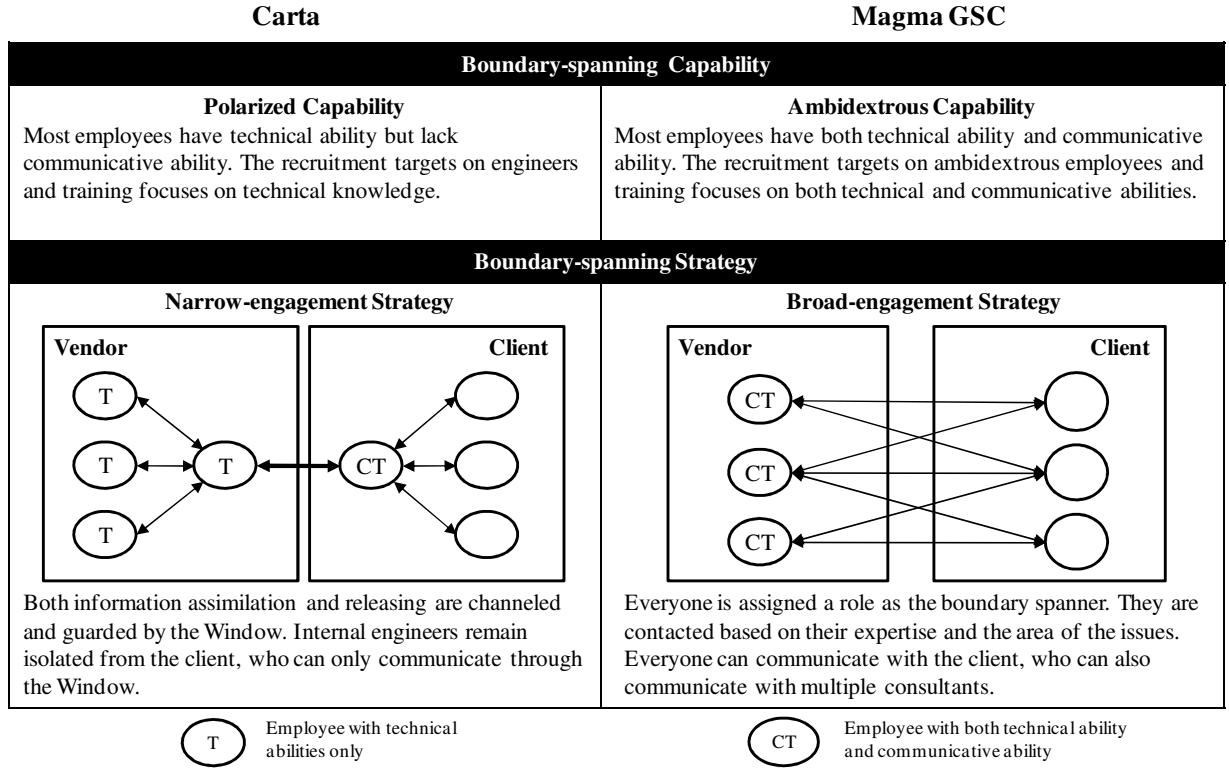


Figure 1: Two Alignment Forms of Boundary-spanning Capability and Boundary-spanning Strategy

Moreover, we find that the polarized capability and the ambidextrous capability are not distinct but rather rest on the same continuum, with respect to the level of communicative capability. The polarized capability lies at one end, with a low level of communicative capability. The ambidextrous capability lies in the other end, with a high level of communicative capability. The technical capability is taken for granted in this continuum, as it is the very basic capability for an ITO vendor to survive (Ramasubbu et al. 2008). Although the polarized capability scores low in communication, its technical component is often outstanding, because of the polarized focus. This technical excellence can somehow compensate for its incompetence in communication. For instance, clients are often more patient and respectful in communicating with vendors who have demonstrated strong research capability. Similarly, the narrow-engagement strategy and the broad-engagement strategy also rest on the same continuum, with respect to the level of transparency. The narrow engagement lies in one end, with low transparency. The broad engagement lies in the other end, with high transparency. Our empirical data shows that these two continuums can be aligned

seamlessly. At one end, the polarized capability and the narrow-engagement strategy are aligned well. The narrow-engagement strategy can hide the weakness of the polarized capability and at the same time bring about the strength of it. At the other end, the ambidextrous capability and the broad-engagement strategy are aligned well. The broad-engagement strategy can maximize the ambidextrous capability and at the same time exhibit the full strength of it. However, the reverse alignment is neither achievable nor desirable. First, the alignment between polarized capability and broad-engagement strategy is unachievable, because the strategy demands so many boundary spanners that the polarized capability is not able to afford. Second, the alignment between ambidextrous capability and narrow-engagement strategy is undesirable, because the ambidextrous capability far exceeds the requirement of the narrow-engagement strategy. Given that the ambidextrous capability is costly and challenging to develop, the polarized way of using it creates a great deal of waste.

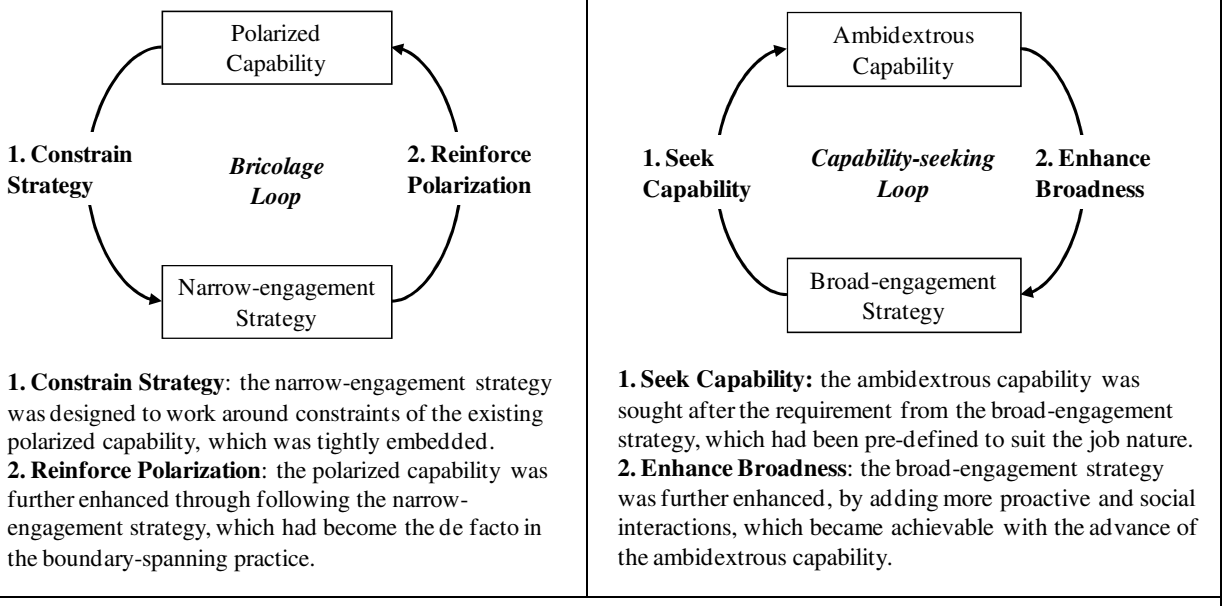
Aligning Paths

The two organizations also took two distinct paths to align their boundary-spanning capability and boundary-spanning strategy (Figure 2). Carta designed its strategy to align with the capability, whereas Magma designed its capability to align with the strategy. Carta's path was attributed to the fact that its polarized capability had already been firmly embedded in the organization when the boundary-spanning strategy was invoked. The embeddedness of the polarized capability was created through the company's early history (Barney 1991). At that time, Carta was operated as a research lab, mainly taking on research projects. The research nature made its capability development less balanced, in which a strong technical capability was created while the communicative capability was largely overlooked. Although polarized, the capability was very effective. It helped Carta deliver solutions beyond the client's expectation and gain a reputation of technical excellence. This early development also influenced the organization's future strategic choice, given that organizations are path-dependent and what organizations do today often depends on what they have done in the past (e.g. Pan et al. 2006; Pan et al. 2007). When clients started to express their dissatisfaction with the polarized capability and called for more communicative capability, the organization faced dilemma of two choices. The first choice was to seek new capability to replace the existing one, which is commonly known as the 'capability-seeking' path (e.g. Berger and Udell 1995; Lerner 1995). The second choice was to do with whatever capability is at hand, which is commonly known as the 'bricolage' path (Levi-Strauss 1966). Both paths have their merits and issues. The capability-seeking path can ease the constraints but will inevitably hurt the existing capability. The bricolage path can work around the constraints but will be difficult to sustain (Baker and Nelson 2005). Given that the polarized capability was firmly embedded and any change to it may jeopardize the survival of the organization (Lavie 2006), Carta took the bricolage path. It enacted the constraints (Weick 1979) and re-organized the existing polarized capability in a different manner (e.g. Cameron 1994; Sutton 1987). In particular, the joint development model was replaced by a restricted window-communication model to align with the polarized capability. The narrow-engagement strategy was thus created. However, the bricolage path is not only about avoiding constraints. It also creates competitive values (Baker and Nelson 2005). Through bricolage, Carta freed its engineers from communication and focused them on the technical strength, delivering the technical excellence as a result.

In Magma, the path is the other way round. The organization had the strategy first and then designed the capability base on the need of the strategy. This is attributed to the fact that as a new entrant, Magma had limited capability available. This vacuum not only rendered the bricolage path irrelevant but also brought no constraints to the new strategy. So, the new strategy could be fabricated to best suit the support task. That is how the broad-engagement strategy was created. However, the strategy was without any constraint. The high requirement for the boundary-spanning capability was difficult to fulfill by nature. To ease this constraint, the organization took the capability-seeking path (e.g. Berger and Udell 1995; Lerner 1995). The new capability was tailored to the broad-engagement strategy (e.g. Helfat and Peteraf 2003; Montealegre 2002). Consistently, high-end recruiting and intensive training were established: 1) new employees were hired only if they had both technical background and no difficulties in communication in Japanese; and 2) new recruits were only qualified for being productive after they had been through intensive technical and communicative training. The ambidextrous capability was thus created.

Our data further reveals that, even within one path, the process is not static, but iterative. In Carta, the path connects to a bricolage loop. In Magma, the path connects to a capability-seeking loop (Figure 2). In Carta, after the narrow-engagement strategy was established, the strategy in turn reinforced the boundary-spanning capability. This is evident in the third stage, when the organization changed its recruitment practice. Since the narrow-engagement strategy had restricted the professional service, experienced engineers who had client experience were no longer preferred. At the same time, low-cost fresh engineers with intensive coding experience became more desirable. The

organization then established its own IT institute to produce engineers that were tailored to narrow-engagement strategy. As a result, the polarization of the capability was further reinforced (Montealegre 2002). In Magma, once the ambidextrous capability was developed, it subsequently enhanced the strategy. This is also evident in the third stage when the proactive support mode was initiated. Since substantial technical capability (e.g. several globally recognized domain experts) and communicative capability (e.g. multiple experienced customer handling consultants) had been accumulated after strictly following the broad-engagement strategy, the organization had the competence to shift its support from the responsive mode to the proactive mode. The strategy remained unchanged at the structure level but it changed at the orientation level (e.g. Ancona 1990; Ancona and Caldwell 1992). Past research has implied that broad-engagement strategy, because of the distributed responsibility (Marrone et al. 2007; Tushman 1977) might suffer from one important issue. Since every boundary spanner has some responsibility but is not solely responsible, s/he may not be fully motivated to take the initiative to approach clients (Ancona 1990). The proactive mode solved this issue effectively and subsequently, enhanced the broad-engagement strategy.



1. Constrain Strategy: the narrow-engagement strategy was designed to work around constraints of the existing polarized capability, which was tightly embedded.
2. Reinforce Polarization: the polarized capability was further enhanced through following the narrow-engagement strategy, which had become the de facto in the boundary-spanning practice.

1. Seek Capability: the ambidextrous capability was sought after the requirement from the broad-engagement strategy, which had been pre-defined to suit the job nature.
2. Enhance Broadness: the broad-engagement strategy was further enhanced, by adding more proactive and social interactions, which became achievable with the advance of the ambidextrous capability.

Figure 2: Two Paths for Aligning Boundary-spanning Capability and Boundary-spanning Strategy

Boundary-spanning by Design

From the alignment-form model and the aligning-path model, we distill a conclusion that boundary-spanning practice of the two organizations, in fact, happens by design. Rather than the typical boundary-spanning practice which happens unregulated (e.g. Ancona 1990; Ancona and Caldwell 1992), the two organizations' boundary-spanning happens through either consciously excising the boundary-spanning strategy or purposely seeking the boundary-spanning capability. Design concept has with it two important facets: the artifact of the design and the process of the design (Hevner et al. 2004). In our study, the alignment-form model functions as the design artifact as it delineates the final output of the alignment and the aligning-path model functions as the design process as it draws the process on how to achieve alignment. In the process, the designers of the boundary spanning, usually the top management (McKelvey and Kilmann 1975), must be fully cognizant of both the capability and strategy.

Nevertheless, the by-design models are not unique to Carta and Magma. Rather, they are applicable to the vendor community. There are two main reasons that vendors design the boundary spanning. First, it is necessary for them to do so. In the ITO relationship, vendors often suffer from having more limited resources (Levina and Vaast 2008) and lower bargaining power (Levina and Kane 2009) than clients. To overcome those challenges, vendors need to plan ahead carefully to present the best part of their capability and portrait a competitive image. By doing so, they can gain respect and trust from the client and subsequently secure more resources and increase the bargaining power. The misalignment, on the other hand, can result the vendor being in a dire situation, where the client perceives them as incompetent partner and co-operates less. This kind of perception, once formed, is often difficult

to reverse. Besides the necessity to design boundary spanning, vendors also have the flexibility to do so. This is attributed to vendors' flexibility in arranging the complementary assets, such as the capability and the organizational structure (Levina and Ross 2003). This flexibility is absent in the client's organization, who often faces the difficulty of rearranging their IT personnel and project team around the projects. This is further corroborated by considerable empirical evidence suggesting that internal IT groups often fail to span boundaries with their internal clients during IT implementation (e.g. Levina and Vaast 2006; Schultze and Orlikowski 2004). And, this inflexibility can be one of the reasons that clients chose to outsource IT projects to vendors, even when they have the economies of scale.

Conclusions

Theoretical and Practical Contributions

By addressing the research question set out at the beginning of the paper, this study makes several important theoretical contributions. First, it fills an important gap in the literature of the ITO relationship, a relationship which calls for more effective boundary spanning (Couto et al. 2006; Cowley 2004). Up to now, research on boundary spanning has been lacking because it has only adopted the client perspective (Levina and Kane 2009; Levina and Vaast 2008). This study sheds light on the vendor perspective. Through the creative theoretical lens of the boundary-spanning alignment, two models are derived on how vendors span boundaries. The first model theorizes two types of alignment: firstly, the alignment between polarized capability and narrow-engagement strategy and secondly, the alignment between ambidextrous capability and broad-engagement strategy. The second model theorizes two types of aligning paths, namely the strategy-design path (i.e. bricolage path) and the capability-design path (i.e. capability-seeking path). Vendors with embedded and strategic boundary-spanning capabilities may design the strategy to align with the capability, while vendors with loosely embedded or obsolete boundary-spanning capability may design new capability to align with the strategy. From these two models, we further derive that vendor boundary spanning occurs by design, instead of happening unregulated (e.g. Ancona 1990; Ancona and Caldwell 1992). In addition, through synthesizing the by-design concept and vendors' complementary assets (Levina and Ross 2003), we further discover that the flexibility to design boundary spanning is an integral part of vendors' core competence, and at the same time one of its competitive advantages over the clients' internal IT groups, who often fail in boundary spanning because of the inflexibility in designing the practice.

On the other hand, this study also makes significant contributions to the literature on boundary spanning. Previous research on boundary spanning has had two important themes: boundary spanner (e.g. Tushman and Scanlan 1981a; Tushman and Scanlan 1981b) and boundary-spanning strategy (Ancona 1990; Ancona and Caldwell 1992). Although these two themes were often treated separately, they are in fact highly interdependent, because one cannot take effect without aligning with the other. Yet, through a review of existing literature, we have failed to identify a single study that examines this alignment. One possible reason is that boundary spanners are often treated on the individual-level and their connection with the strategy is often overlooked. To overcome that gap, our study introduced the concept of boundary-spanning capability, an organization-level capability that is instantiated by the collection of individual spanners. Through conceptualizing boundary-spanning capability, we elevate the influence of individual boundary spanners to the strategic level and successfully associate the spanners' abilities with the organizational strategy.

The by-design concept offers a rational perspective to the boundary-spanning research, which has been dominated by the open-system and natural perspectives. Those two perspectives have taken boundary spanning as either pure inter-organizational activities (e.g. Dollinger 1984; Fennell and Alexander 1987) or pure social-shaped interaction (e.g. Levina and Vaast 2006; Schultze and Orlikowski 2004). However, they fail to look at the boundary spanning as the design that organization chooses to achieve proper goals, which is the essence of the rational perspective (Scott 1998). Given that the rational perspective often functions as the basis for the natural and open-system perspectives (Scott 1998), it is important to fill that gap. Our study is one attempt.

In addition, the two alignment forms also help to reconcile a conflict of two schools of thought. As discussed in the literature review, Tushman (1977) believes that the number of boundary spanners is negatively associated with the boundary-spanning effectiveness, whereas Marrone et al. (2007) maintains that the association is positive. Although both arguments are based on rich theoretical and empirical analyses, which rest mainly on the environmental factors, as influenced by the open-system perspective (Boulding 1956), yet they overlook the internal characteristics, as attributed to the lack of rational perspective (Scott 1998). Specifically, neither of the arguments has considered the readiness of the internal boundary spanners or in other words, neither has considered the influence of the internal

boundary-spanning capability. However, it may be the internal capability that makes the difference. By offering the boundary-spanning capability as a contingency factor, our study provides a possible explanation for the two contradictory thoughts. Last, the study also reveals that boundary-spanning practice is a dynamic process rather than a static process. The iteration between the capability and strategy is constant. Hence, it is recommended that future researchers adopt a dynamic view on boundary-spanning matters rather than a static view (e.g. Ancona 1990; Ancona and Caldwell 1992; Fennell and Alexander 1987).

In terms of practical implications, this study should also be particularly useful, especially for vendors. One critical challenge faced by vendors in ITO is that they often fail to span boundaries with clients (Whitten and Leidner 2006). The by-design models can help vendors solve this problem, as the models offer a set of practical instructions on how to align boundary-spanning strategy and boundary-spanning capability, in order to achieve success. For example, the vendor may use the alignment-form model to assess whether its boundary-spanning strategy and capability are aligned. If the assessment reveals a misalignment, the vendor may then use the aligning-path model to guide it to reach alignment. On the other hand, this research is also helpful to the client. Through uncovering vendor boundary spanning, the client can better understand how vendors span boundaries with them and support vendors accordingly. For instance, knowing that a vendor is using the narrow-engagement strategy, the client should not bypass the broker (e.g. Window) to directly communicate with the internal group, because the internal group is not designed for client communication and by doing so, the client may harm the vendor's pre-designed boundary-spanning structure.

Limitations and Future Research

Despite the theoretical and practical contributions, the current findings must be considered in the light of limitations, which also point to important directions for future research. First, a common criticism of the case study methodology is the problem of generalizability or external validity (Walsham 2006). It must be acknowledged that statistical generalization is impossible with only two case studies. However, we assert that our study is valid and can be generalized beyond the two organizational contexts because the two alignment models are not only grounded in the empirical reality of real organizations but are also corroborated by some of the most established work in the management and IS literature. Thus, this study invokes the principles of 'analytic generalization' (Yin 2003). Nevertheless, future research can deal with the limitations related to statistical generalizability by statistically testing the propositions from the two models. Second, we focused mainly on vendor operation and opinions in this study and did not seek the client's opinion very much (with the exception of client quotes abstracted from the industry report). Although this study is about vendor perspective on boundary spanning, it would still be helpful to understand how client perceives it. At present, boundary-spanning research that incorporates both client and vendor perspectives is comparatively rare. Future research should further consider this area. Third, the two cases are two extreme examples in boundary-spanning alignment. They sit at the two ends of both capability and strategy continuums. Although the extreme cases make the contrast more salient and make the theoretical constructs more significant (Eisenhardt 1989), they overlook cases that happen in the middle of the continuums. In fact, organizations that lie in the middle of the two continuums may bring more assets and fewer liabilities as compared to the two extreme alignment forms. Hence, it would be fruitful to confirm that.

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